WHAT IS CLAIMED IS:

1. An array comprising at least one pattern of probe oligonucleotide spots stably associated with the surface of a solid support, wherein each probe oligonucleotide spot corresponds to a target nucleic acid and comprises an oligonucleotide probe composition made up of a plurality of unique oligonucleotides.

2. The array according to Claim 1, wherein said plurality of unique oligonucleotides are capable of hybridizing to different regions of the corresponding target nucleic acid of the oligonucleotide spot in which they are positioned.

3. The array according to Claim 2, wherein said plurality of unique oligonucleotides hybridize to non-overlapping regions of said target nucleic acid.

4. The array according to Claim 2, wherein said plurality of unique oligonucleotides hybridize to overlapping regions of said target nucleic acid.

5. The array according to Claim 1, wherein two or more different target nucleic acids are represented in said pattern.

6. The array according to Claim 5, wherein each probe oligonucleotide spot in said pattern corresponds to a different target nucleic acid.

7. The array according to Claim 5, wherein two or more probe oligonucleotide spots in said pattern correspond to the same target nucleic acid.

8. The array according to Claim 1, wherein said array comprises a plurality of said patterns.

9. The array according to Claim 8, wherein said plurality of patterns are separated from each other by walls.

10. The array according to Claim 1, wherein the length of each of said oligonucleotides ranges from about 15 to 150 nucleotides.

11. The array according to Claim 1, wherein said array further comprises at least one mismatch probe.

12. The array according to Claim 1, wherein the number of oligonucleotides of each of said oligonucleotide probe compositions ranges from about 3 to 50.

13. The array according to Claim 1, wherein all of said oligonucleotide spots correspond to the same type of target nucleic acid.

14. The array according to Claim 1, wherein the density of spots on said array does not exceed about 1000/cm^2.

15. The array according to Claim 14, wherein the density of spots on said array does not exceed about 400/cm^2.

16. The array according to Claim 1, wherein the number of spots on said array ranges from about 50 to 10,000.

17. The array according to Claim 1, wherein the number of spots on said array ranges from about 50 to 1,000.

18. An array comprising a pattern of probe oligonucleotide spots stably associated with the surface of a solid support, wherein each probe oligonucleotide spot corresponds

to a target nucleic acid and comprises an oligonucleotide probe composition made up of 3 to 50 unique oligonucleotides of from about 15 to 150 nucleotides in length, wherein each unique oligonucleotide is capable of hybridizing to a different region of the corresponding target nucleic acid of the probe oligonucleotide spot in which it is positioned.

19. The array according to Claim 18, wherein said plurality of unique oligonucleotides hybridize to non-overlapping regions of said target nucleic acid.

20. The array according to Claim 18, wherein said plurality of unique oligonucleotides hybridize to overlapping regions of said target nucleic acid.

21. The array according to Claim 18, wherein said unique oligonucleotides of each spot cooperatively hybridize to said target.

22. The array according to Claim 18, wherein ten or more different target nucleic acids are represented in said pattern.

23. The array according to Claim 22, wherein each probe oligonucleotide spot in said pattern corresponds to a different target nucleic acid.

24. The array according to Claim 22, wherein two or more probe oligonucleotide spots in said pattern correspond to the same target nucleic acid.

25. The array according to Claim 18, wherein the length of each of said unique oligonucleotides ranges from about 25 to 100 nucleotides.

26. The array according to Claim 18, wherein the number of unique oligonucleotides of each of said oligonucleotide probe compositions ranges from about 3 to 20.

27. The array according to Claim 18, wherein the density of spots on said array does not exceed about 1000/cm^2.

28. The array according to Claim 18, wherein the density of spots on said array does not exceed about 400/cm^2.

29. The array according to Claim 18, wherein the number of spots on said array ranges from about 50 to 10,000.

30. The array according to Claim 18, wherein the number of spots on said array ranges from about 50 to 1,000.

31. An array comprising a pattern of probe oligonucleotide spots of a density that does not exceed about 400 spots/cm^2 stably associated with the surface of a solid support, wherein each probe oligonucleotide spot corresponds to a different target nucleic acid and comprises an oligonucleotide probe composition made up of 3 to 20 unique oligonucleotides of from about 25 to 100 nucleotides in length, wherein each unique oligonucleotide is capable of hybridizing to a different region of the corresponding target nucleic acid of the probe oligonucleotide spot in which it is positioned.

32. The array according to Claim 31, wherein said unique oligonucleotides hybridize to non-overlapping regions of said target nucleic acid.

33. The array according to Claim 31, wherein said unique oligonucleotides hybridize to overlapping regions of said target nucleic acid.

34. The array according to Claim 31, wherein said array comprises a plurality of said patterns.

35. The array according to Claim 34, wherein said plurality of patterns are separated from each other by walls.

36. The array according to Claim 31, wherein the number of spots on said array ranges from about 50 to 10,000.

37. The array according to Claim 31, wherein the number of spots on said array ranges from about 50 to 1,000.

38. A method of preparing an array comprising at least one pattern of probe oligonucleotide spots stably associated with the surface of a solid support, wherein each probe oligonucleotide spot corresponds to a target nucleic acid and comprises an oligonucleotide probe composition made up of a plurality of unique oligonucleotides, said method comprising:

generating said unique oligonucleotides; and

stably associating said unique oligonucleotides on the surface of said solid support in a manner sufficient to produce said array.

39. The method according to Claim 38, wherein said solid support is flexible.

40. The method according to Claim 39, wherein said solid support is a nylon.

41. The method according to Claim 38, wherein said solid support is rigid.

42. The method according to Claim 41, wherein said solid support is glass.

43. The method according to Claim 38, wherein said method further comprises the step of selecting said unique oligonucleotides.

44. The method according to Claim 43, wherein said unique oligonucleotides are not homologous to any other unique oligonucleotide of any other oligonucleotide probe composition corresponding to a different target nucleic acid.

45. The array produced according to the method of Claim 38.

46. A hybridization assay comprising the steps of:

contacting at least one labeled target nucleic acid sample with an array according to Claim 1 under conditions sufficient to produce a hybridization pattern; and

detecting said hybridization pattern.

47. The method according to Claim 46, wherein said method further comprises washing said array prior to said detecting step.

48. The method according to Claim 46, wherein said method further comprises preparing said labeled target nucleic acid sample.

49. The method according to Claim 48, wherein said preparing comprises conjugating a detectable label to a functionalized target nucleic acid.

50. The method according to Claim 46, where said method further comprises:

generating a second hybridization pattern; and

comparing said hybridization patterns.

51. The method according to Claim 50, wherein said hybridization patterns are generated on the same array.

52. The method according to Claim 50, wherein the second hybridization patters are generated on different arrays.

53. A kit for use in a hybridization assay, said kit comprising:

an array according to Claim 1.

54. The kit according to Claim 53, wherein said kit further comprises reagents for generating a labeled target nucleic acid sample.

55. The kit according to Claim 53, wherein said kit further comprises a hybridization buffer.

56. The kit according to Claim 53, wherein said kit further comprises a wash medium.

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